UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,554	04/04/2001	David Keir Roberts	SMC1P012	5274

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EXAMINER
POPHAM, JEFFREY D

ART UNIT	PAPER NUMBER
2137	

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/826,554	ROBERTS, DAVID KEIR
	Examiner	Art Unit	
	Jeffrey D. Popham	2137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-15* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) *11 and 12* is/are allowed.
6) ☒ Claim(s) *1-10 and 13-15* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on *04/04/2001* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☒ All   b) ☐ Some * c) ☐ None of:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: *1472*

Remarks

Claims 1-15 are pending.

Specification

1.   The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed.

The following title is suggested: "Removable hardware device authentication

system and method."

2.   Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent
and should include that which is new in the art to which the invention pertains. If the
patent is of a basic nature, the entire technical disclosure may be new in the art, and the
abstract should be directed to the entire disclosure. If the patent is in the nature of an
improvement in an old apparatus, process, product, or composition, the abstract should
include the technical disclosure of the improvement. In certain patents, particularly
those for compounds and compositions, wherein the process for making and/or the use
thereof are not obvious, the abstract should set forth a process for making and/or use
thereof. If the new technical disclosure involves modifications or alternatives, the
abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of
the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

3.   The abstract of the disclosure is objected to because

Line 1 – "system method" should be "system and method"

Line 2 – "comprises" should be "comprising"

The claimed new material is not complete in the abstract.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1 and 13 are rejected under 35 U.S.C. 102(b) as being unpatentable over

Nakagawa (U.S. 5,070,479).

Regarding Claim 1,

A hardware authentication system for equipment including at least

one removable hardware component comprising: (Column 3, lines 3-8).

A processing unit within said equipment and including a first

pseudo-random number generator responsive to at least one non-

deterministic event (Column 5, lines 35-42; Column 4, lines 32-41 and Fig. 3) for generating a pseudo-random number;

A second pseudo-random number generator on said removable hardware component, said second pseudo-random number generator also being responsive to said at least one non-deterministic event and generating a pseudo-random number (Column 5, lines 35-42; Column 4, lines 19-23 and Fig. 3), said processing unit comparing the pseudo-random numbers generated by said first and second pseudo-random number generators to detect coincidence and thereby determine authenticity of said hardware component (Column 4, lines 41-45).

Regarding Claim 13,

A method of authenticating a removable hardware componenet installed in equipment, said method comprising the steps of: (Column 3, lines 3-8).

Providing a first pseudo-random number generator on said equipment that is responsive to at least one non-deterministic event (Column 5, lines 35-42; Column 4, lines 32-41 and Fig. 3) for generating a pseudo-random number;

Providing a second pseudo-random number generator in said hardware component that is also responsive to said at least one non-deterministic event for generating a pseudo-random number; (Column 5, lines 35-42; Column 4, lines 19-23 and Fig. 3).

Comparing the pseudo-random numbers generated by the first and second pseudo-random number generators at intervals to detect coincidence and thereby determine authenticity of said hardware component (Column 4, lines 41-45).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa (U.S. 5,070,479) in view of Alcorn et al. (U.S. 5,643,086).

Regarding Claim 2,

Nakagawa discloses a hardware authentication system according to claim 1 wherein said pseudo-random number generators are responsive to non-deterministic events (Column 5, lines 35-42), but fails to disclose that these pseudo-random number generators are responsive to periodic events.

Alcorn et al., however, disclose a pair of pseudo-random number generators that are responsive to both non-deterministic and periodic events (Column 7, lines 17-22 and Column 9, lines 18-26).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to make the pseudo-random number generators responsive to both non-deterministic and periodic events. One of ordinary skill in the art would have been motivated to do so in order to maintain the integrity of the removable hardware component after its original authentication.

Regarding Claim 9,

Nakagawa discloses pseudo-random numbers, but fails to disclose the fact that the processing unit compares them at periodic intervals.

Alcorn et al., however, disclose the comparing of signatures at periodic intervals (Column 9, lines 18-22).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to compare the pseudo-random numbers periodically so as to confirm the authenticity of the hardware component every so often. One of ordinary skill in the art would have been motivated to do so in order to maintain the integrity of all software in the system.

Regarding Claim 10,

Nakagawa discloses pseudo-random numbers, but fails to disclose the fact that the processing unit compares them following each periodic event.

Alcorn et al., however, disclose the comparing of signatures after a periodic event (Column 10, lines 15-20).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to compare the pseudo-random numbers after each periodic event so as to confirm the authenticity of the hardware component every so often. One of ordinary skill in the art would have been motivated to do so in order to maintain the integrity of all software in the system.

8.   Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa (U.S. 5,070,479) and Alcorn et al. (U.S. 5,643,086) as applied to claim 2 above, and further in view of Herz (U.S. 5,325,201).

Regarding Claim 3,

.The Nakagawa and Alcorn et al. system from above discloses the counter responsive to non-deterministic events (Nakagawa, Column 9, lines 29-33). The Nakagawa and Alcorn et al. system from above fails to disclose the register and logic properly.

Herz, however, discloses the following:

A register rotating its contents in response to periodic events; (Column 3, line 54 through Column 4, line 4) and logic coupling the counter and the register, said logic receiving the count value output by said counter and modifying said register contents using the value of said counter, the value held by said register constituting said pseudo-random number (Column 3, lines 51-57).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention that this is a known method for producing pseudo-random numbers. One of ordinary skill in the art would have been motivated to use this type of random number generator to produce a more true random number (though still pseudo-random), making it harder to emulate the generator.

Regarding Claim 4,

The Nakagawa, Alcorn et al., and Herz system from above discloses the fact that the logic performs an XOR operation on the register value using the value of the counter (Herz, Column 3, lines 54-57).

Regarding Claim 5,

The Nakagawa, Alcorn et al., and Herz system from above fails to disclose the fact that the XOR operation is performed on each bit of the register value.

Herz does disclose this performing of an XOR operation on each bit of the register value, however (Column 4, lines 19-31).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention that performing an XOR on every bit of the register value is an acceptable way to go about the process. One of ordinary skill in the art would have been motivated to use this method for XORing the register because it is simple to understand and use.

Regarding Claim 6,

The Nakagawa, Alcorn et al., and Herz system from above fails to disclose the fact that the XOR operation is performed on selected bits of the register value.

Herz, however, discloses this performing of an XOR operation on selected bits of the register value (Herz, Column 3, lines 57-63).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention that performing an XOR on selected bits of the register value is a good way to go about the process. One of ordinary skill in the art would be motivated to use this method for XORing the register so as to provide for more random numbers that are harder to emulate.

Regarding Claim 7,

The Nakagawa, Alcorn et al., and Herz system from above discloses the fact that the first pseudo-random number generator is realized by software executed by the processing unit (Nakagawa, Column 4, lines 32-41; and Fig. 3) and the second pseudo-random number generator is realized in a single physical device within said removable hardware component (Nakagawa, Column 4, lines 19-23 and 32-41; and Fig. 3).

Regarding Claim 8,

The Nakagawa, Alcorn et al., and Herz system from above discloses the fact that the single physical device is an ASIC or a

programmable logic device (Nakagawa, Column 4, lines 19-23 and 32-41;

and Fig. 3).

9.   Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Nakagawa (U.S. 5,070,479) in view of Herz (U.S. 5,325,201).

Regarding Claim 14,

Nakagawa discloses the step of incrementing a count value in

response to non- deterministic events (Nakagawa, Column 9, lines 29-33).

Nakagawa fails to disclose the step of rotating of the register value

constituting the pseudo-random number in response to periodic events as

well as the step of modifying the register value using the count value prior

to rotation of the register value.

Herz, however, discloses the step of rotating of the register value

constituting the pseudo-random number in response to periodic events

(Column 3, line 54 through Column 4, line 4) as well as the step of

modifying the register value using the count value prior to rotation of the

register value (Column 3, lines 51-57).

It would have been obvious to one of ordinary skill in the art at the

time of applicant's invention that this is a known method for producing

pseudo-random numbers. One of ordinary skill in the art would have been

motivated to use this type of random number generator to produce a more

true random number (though still pseudo-random), making it harder to

emulate the generator.

Regarding Claim 15,

The Nakagawa and Herz system from above discloses that the

modifying step includes the step of XORing the register value using the

count value (Herz, Column 3, lines 54-57).

10.   Claims 11 and 12 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jeffrey D. Popham whose telephone number is (571)-

272-3860. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Andrew Caldwell can be reached on (571)-272-3868. The fax phone

number for the organization where this application or proceeding is assigned is 703-

872-9306.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free).

Andrew Caldwell